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VARICORBULA CHOWANENSIS A NEW SPECIES (BIVALVIA: MYACEA) FROM THE PLIOCENE OF NORTH CAROLINA

Richard H. Bailey

Dept. of Earth Sciences
Northeastern University
Boston, Mass. 02115

ABSTRACT

Varicorbula chowanensis n. sp. occurs in the late Pliocene deposits along the Chowan River of northeastern North Carolina. This is the first report of the genus in the Neogene Chesapeake Group of Virginia and North Carolina.

Late Pliocene deposits along the Chowan River in northeastern North Carolina contain diverse molluscan assemblages that are indicative of shallow shelf and estuarine environments. Within these assemblages the family Corbulidae is represented by *Caryocorbula inequalis* (Say), *C. cf. conradi* Gardner, and *Varicorbula chowanensis* n. sp. The genus *Varicorbula* has not been reported from well-exposed late Miocene and Pliocene strata of the Chesapeake Group of Virginia and northern North Carolina; however, specimens of *Varicorbula*, labeled *V. caloosae* (Dall), from the Pleistocene Waccamaw Formation of southeastern North Carolina are in the collections of the United States National Museum.

Varicorbula is unique in that it exhibits the inequivalved condition of the Corbulidae to a very high degree. The right valve is extremely convex

and bears coarse concentric rugae. The smaller left valve is flatter and bears concentric growth lines crossed by irregular radial riblets. Yonge (1949) demonstrated that *Varicorbula gibba* (Olivi) lives with the plane of the commissure vertical despite the asymmetry of the valves. He suggests that the large overlap of the valves may allow the animal to compress water in the mantle cavity periodically to expel pseudofeces. The inhalent siphon of *V. gibba* is flush with the sediment surface so that when the clam is actively pumping, large quantities of fine sediment, along with diatoms, bacteria, and organic detritus are carried into the mantle cavity (Yonge, 1949). In order to utilize such a food resource *Varicorbula* needs an effective mechanism to dispose of the sediment accompanying the food. *Varicorbula chowanensis* also lived in bottoms consisting of

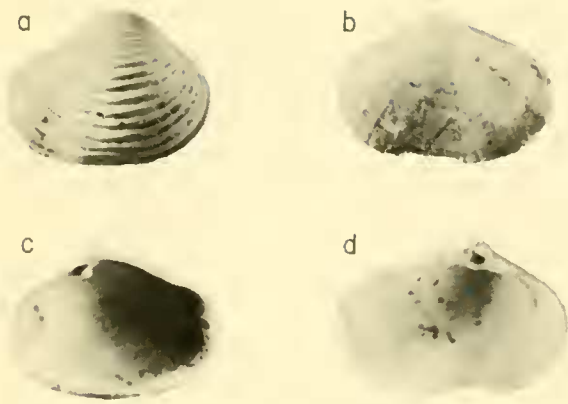


FIG. 1. Exterior of holotype (USNM 241806) of *Varicorbula chowanensis* n. sp., right valve, length 7.2 mm (a); left valve, paratype (USNM 241807), length 6.9 mm (b); interior of right valve (c); interior of left valve (d).

very clayey and silty fine sands. It is likely that the function of the valves hypothesized by Yonge (1949) also operated for the extinct species, *V. chowanensis*.

Family Corbulidae Lamarck, 1818

Genus *Varicorbula* Grant and Gale, 1931

***Varicorbula chowanensis* new species**

(Figs. 1, 2)

Description: Shell small, very strongly inequivalve; right valve convex and inflated with high prosogyrate umbo, rounded anterior, truncate posterior, flat corselet separated from rest of valve by poorly defined posterior diagonal ridge and abrupt anterior turn of concentric ribs; left valve flatter and smaller than right, narrow well defined umbo, rounded low posterior ridge defines irregular corselet, rounded anterior, sub-truncate posterior.

Sculpture of right valve consists of regularly-spaced, rounded concentric ribs, becoming higher and wider near ventral margin; prodissoconch devoid of sculpture. Exterior of left valve with irregular concentric grooves parallel to the growth lines; distinct but frequently irregular growth lines are crossed by faint discontinuous riblets that converge toward the umbo; riblets 3 to 8, with highly variable spacing, and are more distinct on ventral portion of valve.

Interior of right valve with a very faint pallial line and small pallial sinus; with well-developed marginal groove for insertion of left valve; adductor scars small, slightly impressed and closest to dorsal valve margin; single conical cardinal tooth below and slightly anterior of beak; deep subumbonal resilial pit. Interior of left valve shows pallial line; adductor scars poorly-developed; small thick chondrophore immediately beneath and posterior of beak is firmly fused to hinge plate; immediately anterior of chondrophore and beneath beak is a large socket for the cardinal tooth of the right valve.

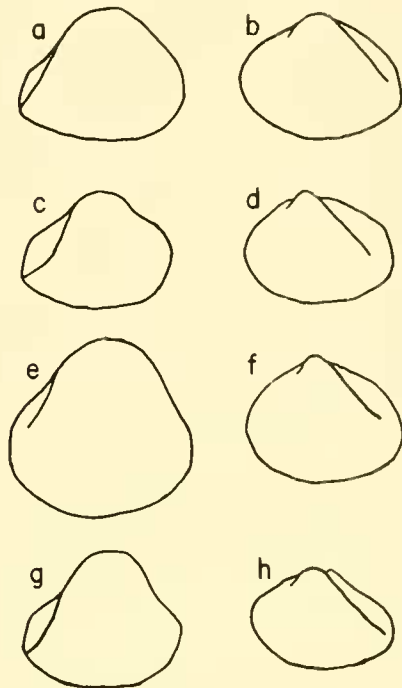


FIG. 2. Valve outlines of Neogene species of *Varicorbula*; *V. caloosae* (Dall), early Pleistocene Caloosahatchee Formation, (a) right valve, length 10.4 mm, (b) left valve, length 8.6 mm, after Olsson and Harbison (1953); *V. chowanensis* n. sp., late Pliocene "Yorktown" Formation, (c) right valve (USNM 241812), length 7.0 mm, (d) left valve (USNM 241815), length 7.0 mm; *V. waltonensis* (Gardner), middle Miocene Shoal River Formation, (e) right valve, length 7.5 mm, (f) left valve, length 6.5 mm, after Gardner (1928); *V. chipolana* (Gardner), lower Miocene Chipola Formation, (g) right valve, length 6.5 mm, (h) left valve, length 5.8 mm, after Gardner (1928).

Measurements

	Valve	H (mm)	L (mm)	No Ribs	No. Ribs/ls
Holotype (USNM 241806)	R	5.7	7.2	18	—
Paratypes (USNM 241807)	L	5.0	6.9	—	9
(USNM 241808)	R	6.4	8.4	22	—
(USNM 241809)	R	6.6	8.9	21	—
(USNM 241810)	R	5.1	6.9	21	—
(USNM 241811)	R	5.0	6.6	18	—
(USNM 241812)	R	5.4	7.0	20	—
(USNM 241813)	L	4.4	6.3	—	4
(USNM 241814)	L	5.4	7.8	—	7
(USNM 241815)	L	5.0	7.0	—	6

DISCUSSION

Varicorbula chowanensis is most similar in shape to *V. caloosae* (Dall, 1898). However, it may be distinguished from the latter by its smaller size, more gently sloping anterior and posterior dorsal margins, narrower umbonal region, and its broader, more distinct posterior region (Fig. 2). The *Varicorbula* lineage of the Neogene of the Atlantic and Gulf Coastal Plains is represented by at least four species (Fig. 2). *Varicorbula chipolana* from the lower Miocene Chipola Formation is the earliest reported member of the lineage. The evolutionary relationships of these species remains to be clearly demonstrated.

Type locality: Pliocene deposits along the west bank of the Chowan River, "Yorktown" Forma-

tion, 2.0 kilometers upstream (north) of bridge where U. S. Route 17 crosses Chowan River, Bertie County, North Carolina, locality 27 of Bailey (1973).

Types: Holotype, right valve, USNM 241806, ventral margin partially broken; figured paratype, left valve, USNM 241807, measured and/or figured USNM paratypes, 241808–241815; undesignated paratypes, 3 fragmentary valves. USNM 241816.

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TWO NEW *RABDOTUS* (PULMONATA: BULIMULIDAE) FROM BAJA CALIFORNIA, MEXICO

Carl C. Christensen and Walter B. Miller

Department of General Biology
University of Arizona
Tucson, Arizona 85721

ABSTRACT

Two new species of the land snail genus Rabdotus are described from Baja California Sur, Mexico. R. gigantensis is reported from the Sierra de la Giganta and R. laevapex is reported from Isla Cerralvo.

The bulimulid genus *Rabdotus* contains most of the larger land snails of Baja California Sur,

Mexico. Although snails of this genus also inhabit much of mainland Mexico and of the southern